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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,392	12/07/2000	Richard Alan Haase	0170SS-45347	7432

7590 08/09/2007

Richard A. Haase  
4402 RINGROSE DRIVE  
Missouri City, TX 77459

EXAMINER	
BARRY, CHESTER T	

ART UNIT	PAPER NUMBER
1724	

MAIL DATE	DELIVERY MODE
08/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/733,392

**Applicant(s)**

HAASE, RICHARD ALAN

**Examiner**

Chester T. Barry

**Art Unit**

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-16, 19, 22, 24-28, 33-38, 40, 41, 44-48, 51-55, 58, 67-71 and 73 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-16, 19, 22, 24-28, 33-38, 40, 41, 44-48, 51-55, 58, 67-71 and 73 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Faxing Papers into the Office

Applicant/Owner is discouraged from faxing his responses into the Office unless and until he double spaces his responses and amendments, and uses a larger type font. The clarity of the faxed responses is poor and ironically only serves to delay efficient processing of his voluminous papers. Applicant / owner is **not** required to use only first class mail, he is simply encouraged to do so. Applicant / owner is **not** required to double space or increase the font size of his response, he is simply encouraged to do so.

Objections to Disclosure

The disclosure is objected to because of the following informalities: At the 12/21/06 amendment to the paragraph beginning at col. 1 line 56, a misspelling of the word "mesophilic" was introduced (the misspelling is, "mesophilic" or perhaps "mesophilic"). See below:

**[mesophilic]mesophilic**

Appropriate correction is required. Objection is **again** made to col 2 lines 25-27 for three instances of misspelling "mesophilic" as "mesophilic." Notwithstanding applicant / owner's remarks (page 14 of 44, 12/21/06) to the contrary, it is not clear why applicant/owner did not correct this error in the 12/21/06 response.

Rejections under 35 U.S.C. Sec. 112, 2<sup>nd</sup> paragraph

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15, which depends from claim 1, recites the limitation "said cationic" at line 4 in the phrase "is added along with said cationic polyacrylamide." There is insufficient antecedent basis for this limitation in the claim from which claim 15 depends, i.e., claim 1, because there is no recitation of "cationic polyacrylamide" in claim 1.

Clarification of Examiner's Position and Response to Owner / Applicant's Remarks

Owner has offered a lengthy response to the Examiner's Note set forth at page 3 of the 8/21/06 Office action. Owner's response suggests that Owner misunderstands the examiner's position. If true, perhaps owner's misunderstanding is due to the examiner's failure to adequately explain his position. The examiner attempts to clarify the examiner's position with the following additional remarks.

During prosecution of original application Serial No. 08/721,557, the examiner required an election of species. The embodiments referred to as "Method One" and "Method Two," which were covered by claims 1 – 16, were elected. Claims 17 – 32, which were directed to non-elected species "Method Three" and "Method Four" were cancelled. Claims 1 – 16 issued as US Pat. No. 5,846,435. This merged application / proceeding is both a reissue and reexamination of the '435 patent. Importantly, only those claims directed to the Method One or Method Two embodiments of the original

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disclosure may be prosecuted in this merged reissue application / reexamination proceeding because the Method Three and Method Four embodiments were non-elected during prosecution of Application serial no. 08/721,557. Furthermore, if terminology or subject matter of the invention were described by applicant in the original disclosure only in connection with the non-elected species of Method Three and Method Four, then such terminology and subject matter should not be used in claims of the present merged application / proceeding because doing so would amount to claiming subject matter that was non-elected, withdrawn from consideration, and not examined during prosecution of the original application. Protecting through reissue or reexamination patent coverage for an invention that was not elected and withdrawn from consideration in the original application is not permitted.

In this particular case, the only embodiments of the invention that may be patented or confirmed in this merged reissue / reexamination proceeding are:

Method One: "the polyquaternary amine is added directly, along with a cationic polyacrylamide, to the biological sludge;" or

Method Two: "the polyquaternary amine and an anionic polyacrylamide are added separately [to the biological sludge]."

(Abstract, USP 5,846,435).

The examiner believes that the foregoing remarks should clarify the examiner's remarks made in the previous Office action (Office action, 8/21/06, at page 3) which are repeated, confirmed and maintained.

Note: "polymeric quaternary ammonium compound" and "quaternary polyacrylamide"

Whenever applicant / owner in the original disclosure used the term "polyquaternary amine,"<sup>1</sup> "polymeric quaternary ammonium compound," "polymeric quaternary amine," or the like in connection to his invention, he was referring to the polymers poly(diallyl dimethyl ammonium chloride) or poly(epichlorohydrin dimethyl amine), i.e., poly(DADMAC) or poly(epi-DMA). See, for example, col 1 lines 10-16; and Examples 1 – 3. These polymers were described in connection with only the Method One<sup>2</sup> or the Method Two<sup>3</sup> embodiments of the invention. Never were any of these compounds added to the sludge in Method Three<sup>4</sup> or Method Four<sup>5</sup> embodiments. On the other hand, whenever applicant / owner in the original disclosure used the term "quaternized polyacrylamide," he was referring to a copolymer made from acrylamide and a quaternary ammonium compound, e.g., poly[acrylamide-co-DADMAC] or poly[acrylamide-co-(epi-DMA)] or poly[acrylamide-co-(allyl chloride)].<sup>6</sup> See also Examples 4 – 7.

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<sup>1</sup> Col 3 line 63; col 5 lines 4-38

<sup>2</sup> Col 5 lines 52 – col 6 line 8.

<sup>3</sup> Col 6 lines 9 - 44

<sup>4</sup> Col 6 line 44 – col 7 line 3.

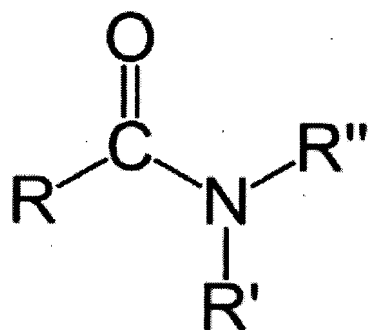
<sup>5</sup> Col 7 lines 4-38

<sup>6</sup> Col 1 lines 20 - 25, col 6 line 47

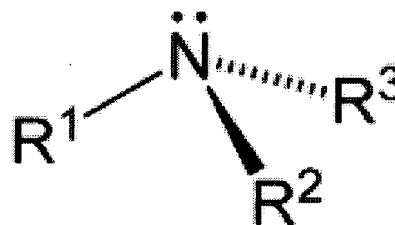
The upshot of this discussion is this: The **only** polymeric quaternary amine compounds that applicant taught that could be used in the Method One or Method Two inventions were poly(DADMAC) and poly(epi-DMA). In addition to these polymeric

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forms of quaternary amines, there was also the description and use of the non-polymeric quaternary amines of DADMAC and epi-DMA. Nowhere in the original disclosure did applicant describe the a polyacrylamide as a "polyquaternary amine" or the like at least for the reason that polyacrylamide, being an amide as shown at left below,



amide



amine

is not an amine at all, as shown at right above. Accordingly, the only embodiments amenable to patenting or confirming in this reissue / reexam are those in which DADMAC, epiDMA, polyDADMAC, or poly(epiDMA) is directly added to the biological sludge along with a cationic polyacrylamide (Method One) or in which DADMAC, epiDMA, polyDADMAC, or poly(epiDMA) and an anionic polyacrylamde are added separately to the biological sludge (Method Two).

Rejection under 35 U.S.C. Sec. 112, 2<sup>nd</sup> paragraph – essential step missing

Claims 33 – 37, 40 are rejected under 35 USC Sec. 112, 2<sup>nd</sup> paragraph, for failing to recite an essential step of the claimed method, as explained at pages 4 – 5 of the previous Office action, the contents of which are incorporated herein by reference.

Claims 8, 10-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Per claim 8, the term "cationic overcharge" cannot be understood because the specification does not define this term and there does not appear to be an art-recognized understanding of this term.<sup>11</sup> Claims 10 – 13, all of which depend from claim 8, are rejected for the same reason as claim 8.

In response to applicant's remarks concerning this foregoing "cationic overcharge" rejection, the examiner agrees that applicant uses the term "cationic overcharge" in the specification. The issue raised in the foregoing rejection, however, is whether the specification adequately defines what is meant by "cationic overcharge." Insofar as there does not appear to be an art-recognized understanding of what this term means, it behooves applicant in the original disclosure to have defined it himself. Having failed to do so, the person having ordinary skill in this art of wastewater treatment is not put on fair notice of the metes and bounds of the claimed subject matter of claims 8, 10 – 13.



Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 24 requires that "said polymeric quaternary ammonium compound compris[e] a polymeric quaternary ammonium compound" having a specified molecular weight. It is unclear just how many polymeric quaternary ammonium compounds we are dealing with here. Does claim 24 require at least two different polymeric quaternary ammonium compounds, at least one of which meets the molecular weight limitation? Similar rejections apply to the recitations of cationic polyacrylamide. For this rejection to be overcome, it is suggested that claim 24 be amended to read as follows: "The method of claim 22, wherein said polymeric quaternary ammonium compound has a molecular weight in the range of about 500,000 to about 3,000,000 and said cationic polyacrylamide has a molecular weight in the range of about 5,000,000 to about 16,000,000" [sic]."<sup>12</sup>

In response to owner's arguments at page 30 of the response of 12/21/06, the examiner disagrees with applicant's contention that the claims should cover methods using polymer blends. Applicant has no support for such an interpretation of claim 24.

Claims 47 and 54, are rejected under 35 USC Sec. 112, 2<sup>nd</sup> paragraph, for failing to particularly point out and distinctly claim the invention for the reasons given with respect to claim 24 immediately above.

35 USC Sec 112, first paragraph, description

Claim 34 is rejected under 35 USC Sec 112, first paragraph, description, for the reasons set forth at page 6 of the previous Office action mailed 8/21/06 and fully incorporated herein by reference.

Claim 71 is rejected under 35 USC Sec 112, first paragraph, description, for the reasons set forth at page 8 of the previous Office action mailed 8/21/06 and fully incorporated herein by reference.

Claims 24, 47, 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Although the original disclosure describes a cationic polyacrylamide having a molecular weight of "about 16,000,000," it fails to describe a cationic polyacrylamide having a molecular weight of "about 15,000,000." Only an "anionic polyacrylamide" was described in the original disclosure as having a molecular weight of "about 15,000,000."

Eberhard and McGrow

Claims 1 - 2, 4 - 8, 10 - 13, 15 - 16, 19, 22, 24 - 28, 33 - 38, 40, 41, 44 - 48, 51-55, 58- 61, 67 - 71, 73, 75 are rejected under 35 USC Sec. 103(a) over Eberhard (in view of Williams) and McGrow (in view of Reimschuessel and USP 5178774 to Payne).

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Claims 1 - 2, 4 - 8, 10-13, 15-16, 19, 22, 24-28, 33-38, 40-41, 44-48, 51-55, 58, 67-71, 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberhard (in view of Williams) and McGrow (in view of Reimschuessel and Payne) for the reasons given at pages 13-19 of the previous Office action (mailed 8/21/06).

#### Response to Owner's Comments

The examiner carefully considered owner's discussion of the teachings of the Eberhard reference at pages 31 - 32 of the 12/21/06 Response. The examiner agrees that Eberhard does not describe addition of a polymeric quaternary ammonium compound as primary component to the biological sludge, as noted previously at page 14 of the 8/21/06 Office action.

The examiner carefully considered Owner's other arguments, including the argument that Dentel teaches away from the claimed invention. The examiner's position is that the weight of the evidence - all of the evidence, that is, including that of Dentel, the recently-filed declarations of Audrey Haase and Richard Haase (see below) - supports the conclusion that the claimed invention is unpatentable for obviousness primarily because a) the skilled artisan would have been motivated to operate Eberhard's 50 deg. C process at a higher temperature, say, at least at 55 deg C in order to speed up the reaction, and b) McGrow suggests using a combination of a quaternary amine coagulant with a polyacrylamide flocculent for various reasons set forth at page 15 of the 8/21/06 action, as repeated below for emphasis:

McGrow teaches that addition of a solution formed from a blend of bead-form cationic polyDADMAC coagulant, such as Percol 368 brand (col 5 line 43) or Magnafloc 368 (col 7 line 37), and bead-form 90 mole % cationic acrylamide copolymer (col 5 line 55) (col 6 lines 3 – 6) (col 8 line 34) to a municipal sewage sludge gives numerous advantages over addition of a high molecular weight polymeric flocculent alone (col 6 line 30 – 45). The advantages include smaller, evenly structured and highly filterable flocs having good shear stability, a system resistant to overdosing and underdosing, reduced risk of forming gelatinous flocs, drier cake, reduced cycle times, better dewatering equipment capacity utilization, improved filtrate quality, better cake release, and cleaner filter cloths.

#### Consideration of Recently-Filed Haase Declarations

The declarations of Audrey Haase and Richard Haase add nothing relevant to the information already of record other than the fact that applicant Richard Haase knew at the time the original application was originally filed that the “Nalco polyacrylamide” used at the College Station, Texas, plant was a “cationic” polyacrylamide. See Richard Haase Declaration filed 12/21/06 paragraph 4 in which he agrees with Audrey Haase’s statement that Nalco dewatering chemical in previous use was a “cationic” polyacrylamide. This information is highly material to the patentability of the claimed invention. See the new ground of rejection set forth below.

#### New Ground of Rejection under 35 USC Sec 103(a)

Claims 1 - 2, 4 – 8, 10-13, 15-16, 19, 22, 24-28, 33-38, 40-41, 44-48, 51-55, 58, 67-71, 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant’s admissions as to the state of the prior art further in view of McGrow.

Applicant admits<sup>1</sup> that it was known that a thermophilic digestion process in public use in this country at College Station Texas added a commercial "cationic" polyacrylamide flocculent to facilitate dewatering of the biological sludge. It was known also that the dewaterability of this sludge was less than desired. There was an apparent motivation to improve the dewaterability of the sludge.

McGrow teaches that addition of a solution formed from a blend of bead-form cationic polyDADMAC coagulant, such as Percol 368 brand (col 5 line 43) or Magnafloc 368 (col 7 line 37), and bead-form 90 mole % cationic acrylamide copolymer (col 5 line 55) (col 6 lines 3 – 6) (col 8 line 34) to a municipal sewage sludge gives numerous advantages over addition of a high molecular weight polymeric flocculent alone (col 6 line 30 – 45). The advantages include smaller, evenly structured and highly filterable flocs having good shear stability, a system resistant to overdosing and underdosing, reduced risk of forming gelatinous flocs, drier cake, reduced cycle times, better dewatering equipment capacity utilization, improved filtrate quality, better cake release, and cleaner filter cloths.

In light of McGrow's teaching that use of a combination of polyDADMAC and cationic polyacrylamide performs better with respect to filterability of formed flocs, better shear stability, drier cake, i.e., improved dewaterability, better dewatering equipment capacity utilization, and various other dewatering process parameters, compared to use of a

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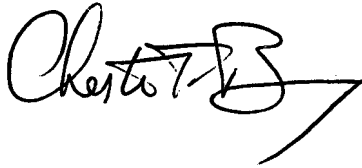
<sup>1</sup> Richard Haase declaration filed 12/21/06 at paragraph 4 agreeing with Audrey Haase statement that the dewatering chemical in previous use was a Nalco "cationic" polyacrylamide.

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cationic polyacrylamide flocculent alone, it would have been obvious to have added an effective amount of polyDADMAC to the biological solids at the College Station plant.

In light of the Supreme Court's recent decision in KSR International v. Teleflex Inc., 550 US \_\_\_\_ (2007), the conclusion of law to be reached in this case is that the claimed invention is unpatentable for obviousness.

Respectfully,

A handwritten signature in black ink, appearing to read "Chester T Barry", with a stylized flourish extending from the end.

Chester T Barry  
Examiner  
571-272-1152